DOCUMENT RESUME

ED 148 457 PS 009 445

AUTHOR Adamson, Lauren; Tronick, Edward
TITLE Infant Defensive Reactions to Visual Occlusion.
PUB DATE Mar 77
NOTE 12p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (New Orleans, Louisiana, March 17-20, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Age Differences; *Behavioral Science Research; Developmental Stages; *Infant Behavior; *Infants; *Reactive Behavior; Vision
IDENTIFIERS *Defensiveness; Visual Occlusion

ABSTRACT

This paper describes the initial organization of the infant's reaction to having his vision occluded by an opaque cloth; traces the development of this reaction over the first six months; and probes the role the occlusion of vision plays in provoking the reaction. Fifty videotaped sessions of infants during two conditions - eyes covered with an opaque cloth and with a clear cloth - and control periods were conducted. The experimental design combined both longitudinal and cross-sectional observations using a total of 12 infants during the age range of 2 days to 26 weeks. Data analysis involved detailed narrative descriptions of the videotapes; quantitative measures of behavior patterns; and formulation of developmental phases. Four developmental phases for the opaque cloth defensive reaction are outlined. The infants initially reacted vigorously, swiping at the cloth and closing their eyes. They gradually inhibited agitated movements and maintained longer alert periods. Finally, they removed the cloth by grasping. The clear cloth provoked a much diminished defensive reaction. The infant's ability to actively use visual input in organizing his behavior and the relevance of the observed developmental pattern to theories of repetition of adaptive behavior and of skill development are discussed. (Author/SB)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED148457

Infant Defensive Reactions to Visual Occlusion

Lauren Adamson
Edward Tronick

Paper presented at the Society for Research in Child Development, New Orleans, March, 1977.

PS009445

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Lauren Adamson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

Covering a young infant's face with an opaque cloth usually provokes a vigorous reaction. The one- to two-month old's generalized agitation differs so markedly from the seven month old's rapid removal of the cloth that it has often been used to illustrate how the very young infant's activity lacks the specificity and direction that characterizes skilled behavior (Langer, 1969; Griffith, 1954; Buhler and Hetzer, 1935). Yet this striking contrast may be misleading since Brazelton (1973) has recently shown that even newborn infants frequently swipe directly at the cloth.

This observation lead us to study the infant's defensive reactions to visual occlusion. Our goal was two-fold. First, we attempted to describe the initial behavior elicited by an opaque cloth on the face and to trace its pattern of developmental change during the first half year of life. Here our primary theoretical concern was to conceptualize how early skill development might best be depicted. We considered two alternatives: would the infant's course of development be one of linear progress in which he displayed increasingly more coordinated actions that were becoming gradually more adapted to the demands of the external event? Or, does the path of development suggest a spiral of progressive repetition in which periods of relative organization and disorganization are complexly interwoven?

Our second aim was to probe why the opaque cloth provokes such intense defensive movements. Our hypothesis was that even the youngest infants were trying to "remove an obstacle preventing their perception" (Piaget, 1954). To test this

hypothesis we had to evaluate the relative roles the cloth's tactile sensation and its occlusion of vision played in provoking the reaction. This was done by comparing the opaque cloth defensive reactions with those elicited by a transparent cloth which touched the infant's face but did not block his vision if he remained open-eyed.

Detailed observations were made of infants experiencing both the opaque and the clear cloth conditions. Each condition was preceded by a 30 second control period when the infant was alert and calm. Then one of the cloths was placed over his eyes and forehead for one minute or until he either removed it by grasping or began to cry. Another control period followed. When the infant was again calm and alert, the second condition was presented.

The experimental design combined longitudinal and cross-sectional observations using a total of 12 healthy, full-term infants. Four of these infants were examined repeatedly at approximately biweekly intervals. In all, 50 sessions were performed over the age range of 2 days to 26 weeks.

Slide 1 illustrates the infant's position during the clear cloth condition. The baby sat partially reclined in a specially designed seat which permitted the free movement of his head and limbs. Slide 2 shows the same infant with the opaque cloth over his face. The cloth was attached to the clear one by a Velco tape so that the same tactile stimulation was maintained during both conditions.

Videotape recordings were made of all sessions. Slide 3 shows a still from the videotape of a 76 day old infant during the opaque cloth condition. Two cameras were used so that we could observe her activity from both the right and left sides:

sound and a digital timer marking 1/100th of a second intervals were simultaneously recorded. Slide 4 provides a not very subtle suggestion of our results: here is the same baby during her clear cloth condition.

Narratives of each session were written based on the videotaped recordings. Included were second by second descriptions of behavior in seven categories: vocalization, facial expression, eyes, and the movements of the head, arms, legs and body. Then the frequency of various behavior patterns in each category was calculated and compared across monthly age intervals and across conditions. Finally, using both the narratives of individual sessions and the results of the quantitative analyses, a series of descriptive phases were formulated to depict the major developmental trends.

The opaque cloth did succeed in provoking the vigorous and complex reactions we had expected. What was quite surprising, however, was the degree to which infants at all ages studied were able to restrict their reactions to the condition period. The response was often immediate with the infants increasing their level of activity markedly in less than 10 seconds in almost 90% of the trials. And, even though the infants did often become upset, they were able to stop reacting suddenly at the condition's end either when they removed the cloth or, as was the case during the first five to six months, the experimenter removed it for them. For example, in 70% of the trials in which the infant had become very agitated and fussed or cried, they stilled and relaxed within 5 seconds of the termination of the condition.

The developmental course observed in the opaque cloth condition can be segmented into four phases. The route we

charted was an intricate one in which neither the organization of specific movement patterns nor the infant's control of his affective reaction followed a smoothly progressive path.

The first phase observations support Brazelton's description of the newborn's defensive reaction. Maintaining an alert state proved difficult; crying occurred in almost all the trials and at the condition's end, the infants had closed their eyes. The behavior displayed was usually quite generalized and vigorous as the infants arched their backs, cycled their legs and arms, and shifted their heads persistently. Yet, certain movement patterns were apparent. For example, the head was usually jerked upward repeatedly, both as the initial shift and as a reoccurring movement that was accentuated by neck stretching. Most importantly, some of the actions were appropriately directed. The hands were often held near the face and most of the infants frequently swiped directly at the cloth.

A second phase description was necessary by approximately the third month. The most striking change was that the patterning and directedness found in Phase A were gradually diminishing. The frequency of directed swipes had declined markedly even though the infants still moved their arms almost continuously. No new arm movement patterns appeared which superceded the dominance of swiping. Head movements were also less predictable as the frequency of the initial upward shifts and neck stretching decreased.

State control was however improving. Although agitation and crying were still characteristic, the infants were able to remain alert longer during Phase B and to have open eyes when the cloth was removed.

Phase C began during the 4th or 5th month as the infants began to inhibit their large limb movements and to display pre-grasping behavior. They tensed their limbs and often tremored and made small, rapid cycles of their arms. Their mutual hand grasping and their pressing of their hands against the face foreshadowed grasping of the cloth. Yet they were not able to orchestrate these components and achieve successful removal.

Reducing the "degrees of freedom" of their movements and achieving near success seemed frustrating. Thus, despite a trend towards decreased upset, three of the four longitudinally examined infants began to cry during the session just prior to the one in which grasping was finally mastered.

During Phase D the infants behaved in a qualitatively different manner. Here the six to seven month olds rapidly removed the cloth with little hesitation, tension, or "excess" movement. Many of the infants even seemed to be enjoying the condition.

These four developmental phases do not describe the infant's behavior during the clear cloth condition. These observations were not sufficiently varied to justify a phase analysis that spans the first six months of life. In short, the clear cloth seemed to provide the infant with little to get defensive about.

This conclusion is amply supported by the almost uniform statistical significance of the quantitative comparions between the clear and opaque cloth conditions. In all seven of the behavior categories we considered, the infants in the clear cloth condition displayed a marked decrease in the agitation and the movement patterns which characterized the opaque cloth defensive reaction.

The clear cloth did, however, affect the infant's ongoing activity, especially during the earliest weeks. When it touched their faces, it provoked immediate eye closure in almost 3/4 of the trials. If the infants did not reopen their eyes, they did tend to react with the same form of defensive behavior they displayed in the opaque cloth condition.

This tactile disturbance did not however prove to be an insurmountable one. Even in the newborn period, some of the babies reopened their eyes, stilled and looked calmly through the cloth. By the advent of Phase B in the opaque cloth condition, the infants were open-eyed for almost the entire clear cloth condition. They did not seem to be trying to remove the cloth nor did they appear to be very disturbed by its presence. When they developed the skill of grasping and removing the opaque cloth, they used it only rarely in the clear cloth condition and then only when they had just previously experienced the opaque cloth on their faces.

The infant's reactions to the opaque and the clear cloths present many challenges to those who aspire to formulate a model of skill development. To be adequate, this model should not, for example, characterize the very young infant's behavior as merely uncoordinated and diffuse or as rigidly stereotyped and reflexive since it could then not do justice to the opaque cloth condition's Phase A baby who could appropriately direct his arm movements even though he was "diffusely awkward." Moreover, the model must provide an adequate explanation for periods of relative disorganization such as those observed in Phase B when the directedness and consistent patterning of movements diminished in the opaque cloth condition. Thirdly,

it must consider the relationship between the sensori-motor and the affective aspects of development so that the Phase C infant's renewed tendency to become upset and the Phase D baby's enjoyment of his skill can be appreciated.

While no model exists yet that fully meets these challenges, Bruner (1968, 1973) has been quite successful in addressing some of these issues. One of his points has particular relevance to our data. He argues that intentionality must precede skill and that it is this 'volitional' component of early actions which is the most critical precursor of later skilled behavior. Our comparison of the clear and opaque cloth reactions seems to illustrate this well. The infant appeared to be trying to remove an obstacle that prevented their perception months before they could skillfully do so. They were able to cease reacting defensively once this goal of renewed visual contact with the environment was achieved passively as when the opaque cloth condition was terminated because the infant had become upset. Moreover, once this goal was obtained when the infant opened his eyesin the clear cloth condition, the baby could actively use the nonspecific visual input to overcome the tactile disturbance of the cloth.

BIBLIOGRAPHY

Brazelton, T. B., "The Neonatal Behavioral Assessment Scale," Clinics in Developmental Medicine, 50, 1973.

Bruner, J., Processes of Cognitive Growth: Infancy, Heinz Werner Lecture Series, Vol. III, Worchester: Clark University Press, 1968.

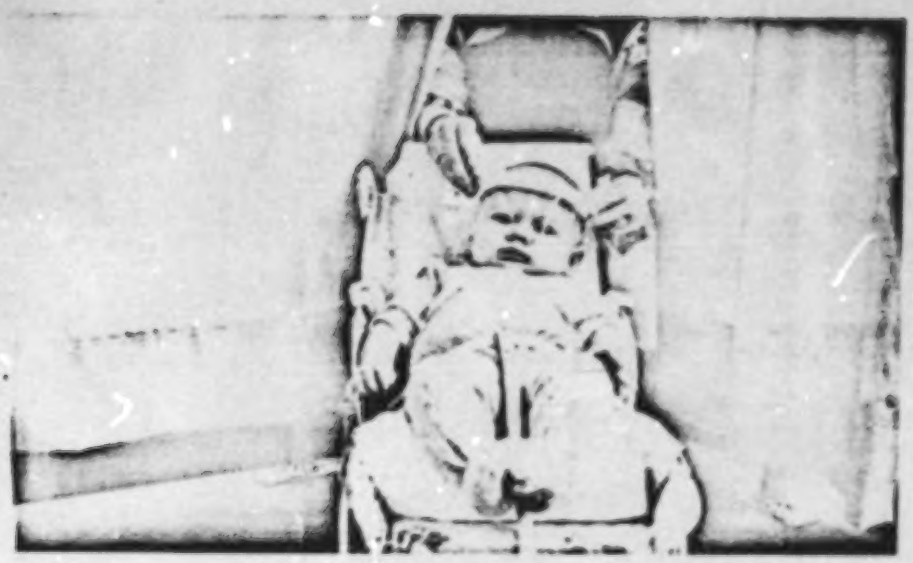
Bruner, J., Beyond the Information Given, J. Anglin (ed.), New York: W.W. Norton, 1973.

Buhler, C. and Hetzer, H., Testing Children's Development from Birth to School Age, New York: Farrar and Rinehart, 1935.

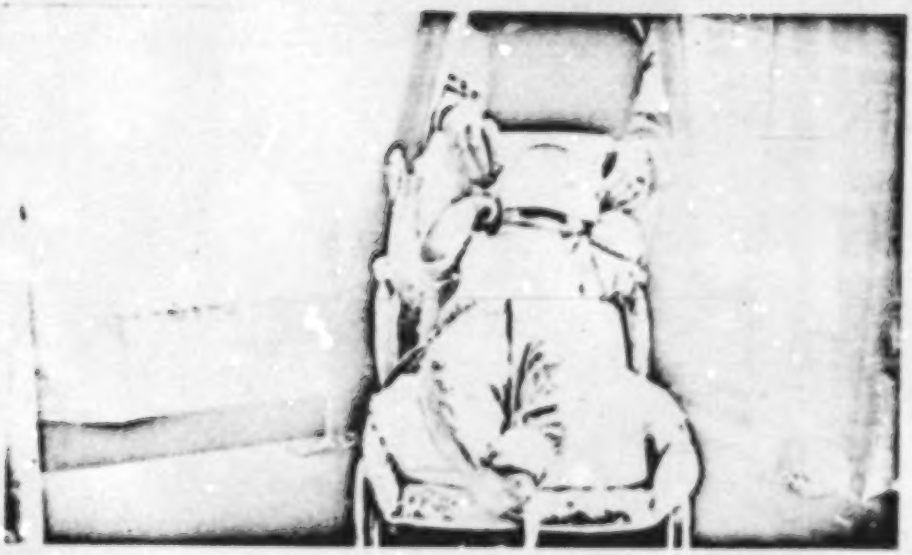
Griffith, R., The Abilities of Babies, London: University of London Press, 1954.

Langer, J., Theories of Development, New York: Holt, Rinehart, and Winston, 1974.

Piaget, J., The Construction of Reality in the Child, New York: Basic Books, 1954.



Slide 1



Slide 2

Slide 3

Slide 4